March 2026

WIRM

User Manual

FDS TIMING SOLUTIONS

FDS-TIMING, SWITZERLAND

Wireless Infra-Red Multi Cells (WIRM)

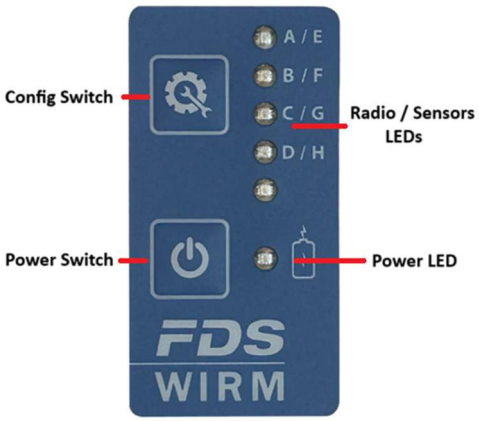
The WIRM system consists of a pair of infrared emitting and receiving photocells that create a precise light curtain, specifically designed for dog agility timing applications.

- **Seamless Wireless Performance** – Works flawlessly with the TBox-Radio in an FDS wireless setup, ensuring smooth and precise timing every run.

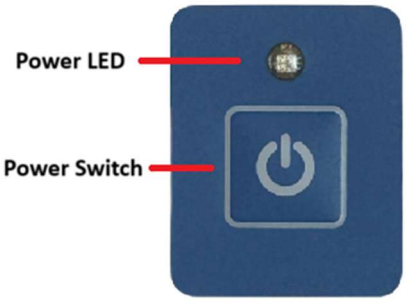
- **Flexible Connectivity** – Switch effortlessly between wireless and wired operation using a standard 3.5mm jack, adapting to any setup with ease.

1. Keypad and connections

WIRM-RX



WIRM-TX



2. Connectors protection

The connectors located on the bottom of the cell frame are protected by a little cap.
You just have to move the cap CW or CCW to uncover the connectors.

3. Tripod fixation

The full timing kit is delivered with 4 tripods, 2 for each photocell's pairs.
For the top fixation you have to use the little provided spacer.
The bottom fixation requires a clamp attached on the tripod boom.

Top fixation

Bottom fixation

4. Power control and status

4.1. Power On/Off

Using the **Impulse Devices Manager** (PC application), three different power ON/OFF sequences can be selected on the WIRM.RX:

1. The ***"Secured"*** sequence.
   - Press the power switch briefly (0.5s–1.5s) until the battery status is indicated on Radio LEDs **A–D**.
   - Release the power switch and repress it within **1 second**.
   - Hold the switch down until:
     - All four Radio input LEDs are ON, and
     - An audible beep signal is emitted (if the buzzer is enabled).

2. The ***"Simplified"*** sequence.
   - Press and hold the power switch for about **3 seconds**.
   - Indications:
     - During the first second, the Radio LEDs A–D display the battery status.
     - After ~3 seconds, all Radio LEDs and the Power LED light up:
       Green = Power ON
       Red = Power OFF
     - An audible beep signal is emitted.

3. The ***"Automatic"*** sequence.
   - The WIRM powers **ON automatically** when USB external power is applied.
   - It powers **OFF automatically** after a defined delay once USB power is removed.
   - Manual ON/OFF is still possible. If used, the WIRM reverts to the **Secured/Simplified** sequence**.**

The same sequences are available on the WIRM-TX at the only difference that only one status led is used.

4.2. Battery status

The power LED give an indication of the battery status. See table below:

Power LED	Device Power	USB	Battery
Yellow ON	OFF	connected	Battery Charging
Green ON	OFF	connected	100% charged
Yellow blinking	ON	connected	Battery Charging
Green blinking	ON	connected	100% Charged
Green blinking	ON	disconnected	> 25%
Red blinking	ON	disconnected	Low battery

WIRM-RX

Press and hold the ON/OFF button for about 1sec.
The Radio LEDs (A-D) will illuminate to indicate the battery charge status.

4 LEDs ON green: 75-100 %
3 LEDs ON green: 50-75%
2 LEDs ON green: 25-50%
1 LED ON green: 10-25%
1 LED ON red: < 10% (Will work only with external power plugged)

!! Once released, the alignment mode will be activated, so press again the button to exit this mode.

WIRM-TX

Press and hold the ON/OFF button for about 1sec.
The status LED will illuminate to indicate the battery charge status.

Red: < 30%
Yellow: 30 - 60%
Green: > 60%

5. Setup and Alignment

2. **Alignment Mode**
   When powered on, the WIRM enters Alignment Mode automatically. The five status LEDs provide instant feedback for each sensor.

   - Red = Not aligned
   - Green = Aligned

   Adjust the units until all LEDs show steady green. For the most reliable results, gently move the WIRM left, right, up, and down to find both the alignment limits and the optimal center position. This ensures that small movements or vibrations will not trigger false signals.
   After remaining aligned for 1–2 minutes, the system automatically exits Alignment Mode and is ready for operation.

3. **Reactivating Alignment Mode**
   Need to realign? Simply press the power switch briefly to restart alignment mode.
   Press again to exit if required.

4. **Automatic Alerts**
   If a sensor becomes misaligned or a beam is blocked, the corresponding LED will flash red and a beep will sound. When connected, the TBox will also issue an alert for added reliability.

6. Radio configuration

The WIRM photocell is configured and linked to a TBox-Radio using two Parameters. Both of them must match on WIRM and TBox

- **Group** (radio frequency)
- **Input/ID** (TBox Input / WIRM serial number)

6.1. Group

To configure your desired Group, press the Setup button 
The selected Group is indicated by the LED array (A, B, C, D).
Release the button and press again to change the selected group.

Group	LED A	LED B	LED C	LED D
A	GREEN			
B	GREEN	GREEN		
C	GREEN	GREEN	GREEN	
D	GREEN	GREEN	GREEN	GREEN
E	YELLOW			
F	YELLOW	YELLOW		
G (*1)	YELLOW	YELLOW	YELLOW	
H (*1)	YELLOW	YELLOW	YELLOW	YELLOW
OFF (*2)	RED	RED	RED	RED

(*1) only available for North America and Japan

(*2) The radio transmission function is disabled. This mode should be selected to save power when you connect the photocells using a hard-wired solution (jack output).

Country (Groups)	Distance of transmission (*3)	Min locking time
Europe/India/Russia (A, B, C, D)	Up to 2000m	200ms
Europe/India/Russia (E, F)	Up to 5000m	500ms
USA (A, B, C, D)	Up to 4000m	200ms
USA (E, F, G, H)	Up to 6000m	500ms
Japan (A, B, C, D)	Up to 1000m	200ms
Japan (E, F, G, H)	Up to 1500m	500ms

(*3) Clear line of sight

⚠ In Groups E-H, if more than 1 impulses per second is expected (all devices), radio transmission can become slow and impulses might be missed.

Radio Setup Lock Function

To prevent accidental radio group changes, the Radio Setup button can be locked or unlocked by pressing and holding both the Radio button and the Power button simultaneously.

- When locked: **LEDs A and D flash red**
- When unlocked: **LEDs A and D flash green**

6.2. WIRM and TBox-Radio Pairing

Each WIRM has a **unique ID** (serial number) that can be paired with a **TBox-Radio input (A–F)**. Pairing can be done via an application or manually.

Option 1: Using the application "Device Manager"

- No need to be in presence of WIRM (Just the SN is required)
- Enter the Device Serial Number in the TBox inputs settings
- Do not use the same serial number for more than one TBox input.

Option 2: Manual Pairing (No Application)

- **Requirements**
  - Both TBox-Radio and WIRM must be powered on.
- **Steps**
  1. Enter pairing mode on TBox-Radio
     - Press the Setup button for **3 seconds** until a long beep sounds.
     - LED corresponding to input A flashes yellow.
  2. Select the desired input (A–F)
     - Perform a **short press** on the Setup button until the correct input is selected.
  3. Enter pairing mode on the WIRM
     - Press the Setup button for **3 seconds** until a long beep sounds.
  4. Completion (When pairing is successful):
     - LEDs A–F on the TBox flash yellow.
     - Both TBox and WIRM return to normal operation.
- **Exiting Manual Pairing Mode**
  - Press the Setup button on either the TBox or WIRM for 3 seconds until a long beep sounds.

7. Radio communication

Any messages that do not receive an ACK from the TBox-Radio will be retransmitted several times. The WIRM indicates each time an impulse is transmitted or retransmitted by flashing its A/E LED:

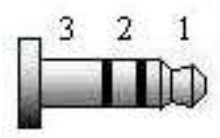
- **Green flash:** Pulse transmission successfully completed.
- **Yellow flash:** The last message did not receive an ACK.
- **Red flash:** No ACK has been received from the TBox-Radio after all attempts (the impulse may be lost).

Those indications provide the user with a basic method to test the positioning and communication between the TBox-Radio and WIRM.
Frequent yellow or red flashes may indicate unstable communication. Adjusting the position of the WIRM or the TBox-Radio—or even just the antennas—may improve the connection.

⚠ Radio transmissions cannot be 100% guaranteed. An unfavorable environment, lack of line of sight, interference or an improper installation might lead to the loss of data.
FDS cannot be held responsible for any of the above.

8. Wired connection (Impulse and Data)

The jack connectors at the bottom of the WIRM-RX photocell receiver allows a hard-wired connection to most modern timing devices.
It features an optocoupler on the output, which can safely handle up to 16 V.



1: Impulse optocoupled output
2: RS232 RXD
3: GND

The same Jack connector can be also used to connect our RCID (RFID) device.
When received, the competitor number is immediately sent by radio to the TBox.

9. USB

The USB-C connector has various functions including:

- External power supply and battery charging
- Configure the WIRM photocell options and parameters
- Update the Firmware
- Hardware reset in the unlikely event of a frozen WIRM

10. Firmware Update Procedure

Updating the WIRM firmware is straightforward. The FdsFirmwareUpdate software is required.

1. **Install Software**
   - Install the application **FdsFirmwareUpdate** on your computer.
   - Launch the application.
2. **Connect Device**
   - Connect the USB cable between your PC and the WIRM photocell.
3. **Select COM Port**
   - Choose the COM port corresponding to the connected WIRM device.
4. **Select Firmware File**
   - Select the **".bin" firmware file** for the update.
5. **Start Update**
   - Press **Start** in the program.
   - The WIRM photocell firmware will update automatically.
6. **Finalize Update**
   - Once the update completes, **disconnect the USB cable**.
   - **Switch ON** the WIRM photocell to activate the new firmware.

11. Technical specifications

Frequencies & Power: Europe India North America Japan (TBox-41 only)	 869.4 - 869.65 MHz 100mW 865 - 867 MHz 100mW 920 - 924 MHz 100mW 922 - 927 MHz 20mW
Operating temperature	-20°C to 60°C Battery charge possible only between 0°C and 45°C
Radio impulse precision	0,005 sec
IR detection	5 sensors for a total detection height of 70cm Max 3m between RX and TX
External power input	USB compatible (5V +/- 10%) up to 1A
Battery	RX: LiPo 1900mAh TX: Lipo 1000mAh
Autonomy	80 hours @ 20°C
Dimensions	RX: 820x40x40mm TX: 820x30x30mm
Weight (Rx / Tx)	780g / 600g

12. Copyright and Declaration

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